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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/810,735

03/25/2004

Jick M. Yu

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9698

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7590

11/15/2005

BLAKELY SOKOLOFF TAYLOR & ZAFMAN
12400 WILSHIRE BOULEVARD
SEVENTH FLOOR
LOS ANGELES, CA 90025-1030

EXAMINER

PERALTA, GINETTE

ART UNIT

PAPER NUMBER

2814

DATE MAILED: 11/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

H.A

Office Action Summary

Application No.

10/810,735

Applicant(s)

YU, JICK M.

Examiner

Ginette Peralta

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 8/5/05.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 31-39 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claims refer to a feature of a "logic to cause robots to move the wafers having the metal layers deposited thereon from the chemical vapor deposition chambers directly to the one or more annealing chambers shortly after the metal layers have been deposited on the wafers", although there is a description for a robot to move the wafers, there is no disclosure of any logic that causes the robot to move the wafers nor that it causes it to move the wafers in any specific order.

3. Claims 40-46 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claims refer to a feature of a "logic to

cause robots to move the wafers having the metal layers deposited thereon from the one or more annealing chambers directly to the one or more chemical mechanical polishing chambers shortly after the metal layers have been deposited on the wafers", although there is a description for a robot to move the wafers, there is no disclosure of any logic that causes the robot to move the wafers nor that it causes it to move the wafers in any specific order.

4. Claims 47-51 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claims refer to a feature of a "logic to cause the robot to move the wafers that have been polished from the one or more chemical mechanical polishing chambers directly to the one or more annealing chambers", although there is a description for a robot to move the wafers, there is no disclosure of any logic that causes the robot to move the wafers nor that it causes it to move the wafers in any specific order.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2814

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 31, 33-41, 43-48, and 50-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Henley et al. (U. S. Pat. 6,207,005 B1).

Regarding claim 31, Henley et al. discloses in Figs. 1 and 3 an apparatus comprising a plurality of chemical vapor deposition chambers 302, the chemical vapor deposition chambers to deposit metal layers on wafers by chemical vapor deposition (as disclosed in col. 11, lines 20-29); one or more annealing chambers 303, the one or more annealing chambers 303 integrated with the wafer processing apparatus, the one or more annealing chambers to anneal the wafers (as disclosed in col. 11, lines 8-19); a robot 20 to move the wafers along the chambers (as disclosed in col. 4, lines 14-21).

Henley discloses the claimed invention with the exception of explicitly teaching logic to cause the robots to move the wafers having the metal layers deposited thereon from the chemical vapor deposition chambers directly to the one or more annealing chambers shortly after the metal layers have been deposited on the wafers.

Henley discloses in col. 4, lines 14-21 that the "robot 20 can insert and remove a wafer 16 or wafers from any one of the chambers according to a desired application". Thus it is inherently taught that a logic is present that causes the robot to move the wafers from one chamber to any other chamber and, furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to move

the wafer from the chemical vapor deposition chamber directly to an annealing chamber as is shown in the process diagram shown in Fig. 3.

Regarding claim 33, Henley et al. discloses in Fig. 1 that the one or more annealing chambers are attached to the side of the wafer processing apparatus.

Regarding claim 34, Henley et al. discloses in Fig. 1 that the one or more annealing chambers are provided adjacent to the wafer processing apparatus and its chemical vapor deposition chambers.

Regarding claim 35, Henley et al. discloses that the apparatus is used for the deposition of a conductive film, as disclosed in col. 11, lines 27-29 and even further that the apparatus can be used to deposit copper, as disclosed in col. 11, lines 34-38, but more importantly the structure is taught by Henley et al. as applied above, and it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex Parte Masham*, 2 USPQ F.2d 1647 (1987).

Regarding claim 36, Henley et al. discloses in col. 13, lines 46-58 that the annealing chamber may comprise a furnace.

Regarding claim 37, Henley et al. discloses in col. 13, lines 46-58 that the annealing chamber may comprise a heat lamp.

Regarding claim 38, Henley et al. discloses in col. 13, lines 46-58 that the annealing chamber may comprise a hot stage.

Regarding claims 40, 41, 47, and 48, Henley et al. discloses in Figs. 1 and 3 an apparatus comprising one or more annealing chambers 303, the one or more annealing chambers 303 integrated with the wafer processing apparatus, the one or more annealing chambers to anneal the wafers (as disclosed in col. 11, lines 8-19); one or more chemical mechanical polishing platforms 305, the chemical mechanical polishing platforms integrated with the wafer processing apparatus, the one or more chemical mechanical polishing platforms 305 integrated with the wafer processing apparatus, the one or more chemical mechanical polishing platforms to polish the wafers; a robot 20 to move the wafers along the chambers (as disclosed in col. 4, lines 14-21).

Henley discloses the claimed invention with the exception of explicitly teaching logic to cause the robots to move the wafers having the metal layers deposited thereon from the one or more annealing chambers directly to the one or more chemical mechanical polishing platforms.

Henley discloses in col. 4, lines 14-21 that the "robot 20 can insert and remove a wafer 16 or wafers from any one of the chambers according to a desired application". Thus it is inherently taught that a logic is present that causes the robot to move the wafers from one chamber to any other chamber and, furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to move the wafer from the annealing chamber directly to the one or more chemical mechanical polishing platforms as is shown in the process diagram shown in Fig. 3.

Regarding claims 43, 44, 50, and 51, Henley et al. discloses in Fig. 1 that the one or more annealing chambers are provided adjacent to the wafer processing apparatus and the one or more chemical mechanical polishing platforms.

Regarding claim 45, Henley et al. discloses in col. 13, lines 46-58 that the annealing chamber may comprise a furnace, a heat lamp, or a hot stage.

Regarding claims 39 and 46, Henley et al. discloses in col. 13, lines 58-64 that the annealing chamber heats the wafer to a temperature of about 450°C to about 500°C. It would have been obvious to one of ordinary skill in the art at the time the invention was made that since the annealing chamber can heat the wafer up to 500°C that it also has the capability of heating the wafer up to a lower temperature as there is no statement denoting the criticality of the temperature to which the wafer is heated and since the equipment has the capability of reaching various temperatures including 200°C.

"In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990) (The prior art taught carbon monoxide concentrations of "about 1-5%" while the claim was limited to "more than 5%." The court held that "about 1-5%" allowed for concentrations slightly above 5% thus the ranges overlapped.)" (MPEP 2144.04)

Response to Arguments

7. Applicant's arguments filed 8/2/05 have been fully considered but they are not persuasive.

Applicant's arguments are directed to the newly added claims which have been addressed above.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ginette Peralta whose telephone number is (571) 272-1713. The examiner can normally be reached on Monday to Friday 8:00 AM- 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GP



HOAI PHAM
PRIMARY EXAMINER